Review/**Television**

Chess Riddle: What Value Calculation? Inspiration?

By WALTER GOODMAN

You don't have to know a rook from a bishop to find tonight's edition of "Nova" fascinating. "The Chip vs. the Chess Master," at 8 o'clock on Channel 13, uses the October 1989 match between the Soviet-born world champion Gary Kasparov and the American-made champion computer Deep Thought to explore the differences between human intelligence and the intelligence of a machine.

As Dr. Herbert A. Simon, who won a Nobel prize for his early work with computers, explains, Deep Thought is a step in mankind's effort, long the stuff of science fiction, to create "a machine that's better than us." So it is natural that the spectators at the big confrontation, mostly chess fans but human withal, were rooting for Mr. Kasparov against a machine that had already demolished lesser players. At stake in such a contest, Dr. Simon suggests, is nothing less than mankind's place at the center of the universe.

The hourlong program goes back two centuries to expose the first chess-playing devices, all fakes; a concealed human player operated the controls. But in the 20th century came contraptions that could play a simple endgame and win. From trying to make a machine that imitated the human mind, scientists have turned to letting the machine do what it can in its own way. A result, from a team of graduate students at Carnegie-Mellon University, is Deep Thought, described here as "the first computer good enough to challenge a world champion."

The program captures what the appreciative narration calls the "incomparable beauty and impenetrable mystery" of the game of chess through the contrasting strengths and styles of machine and man. Deep Thought, which can evaluate 700,000 moves in a second, is essentially a prodigious number cruncher. No human mind can match what the experts call the power of its "brute force" search; but so far no machine seems able to bring to the game the incentive, imagination, inspiration that make champions.

"You got to want to win," says one grandmaster. Deep Thought has no wants; it just does what it is programmed to do, calculate the best possible move in a wink — although not even the most advanced computer can as yet play out all the trillions upon trillions of possibilities once the game goes past the openings. Deep Thought is a whiz at defense. Mr. Kasparov is known for his slashing, innovative offense. The champion, who aspires to be "the man who will save our pride," sees a chess match as a struggle to destroy the ego of his opponent. Does Deep Thought have an ego?

Computer experts discuss their efforts to reinforce the machine's speed with knowledge to counter the thousand years of experience in the mind of the chessmaster. Anatoly Karpov, who was recently defeated by Mr. Kasparov in a world championship match, tells of his encounter with Deep Thought, which almost forced him to a draw. While the computer calculates, he says, the great player sees the "soul of the position." But the human player is also subject to discouragement; the computer never loses hope. At the chess board, the narrator observes, it is man who works in mysterious ways.

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Mr. Kasparov won in 1989. (Deep Thought failed to castle soon enough, an error attributed to "a bug.") But there is near-unanimity here that it is only a matter of time before a machine, composed of enough chips to run through a billion or so possibilities in a second, will be unbeatable. Are chess fans prepared for world championships played out between two computers?

So what began as experiments to test the limits of machines has turned into a test of the limits of man. The one consolation that the experts can offer to boosters of humanity is that the machine itself, after all, is a creation of the human mind. For now, at any rate, whatever its accomplishments at the chess board, no computer can match the intelligence and sensitivity shown by Irv Drasnin's production, direction and writing of this rich program.

Associated Press

"The Chip vs. the Chess Master" uses a match between Gary Kasparov and a computer to compare human and artificial intelligence.

Nova

The Chip vs. the Chess Master

Produced, written and directed by Irv Drasnin for the WGBH Science Unit and PBS; Paula Apsell, executive producer and director of WGBH Science Unit. At 8 o'clock tonight on Channels 13, 21 and 49.